

ABSTRACT OF THE DISCLOSURE

[75] A magnetoresistive head which has a high low resistance and a high MR ratio at room temperature and a S/N ratio that does not decrease sharply upon application of a bias voltage. The magnetoresistive head comprises a soft magnetic free layer, a non-magnetic insulating layer, and a ferromagnetic pinned layer. The ferromagnetic pinned layer may have a spin valve layer whose magnetization is fixed with respect to the magnetic field to be detected, and the soft magnetic free layer permits its magnetization to rotate in response to an external magnetic field, thereby changing the relative angle with the magnetization of said ferromagnetic pinned layer and producing the magnetoresistive effect. The absolute value of the magnetoresistive effect has a peak at a temperature in the range from about 0°C to 60°C and for a bias voltage V_s (applied across said ferromagnetic pinned layer and said soft magnetic free layer) in the range from +0.2 to +0.8 V and from -0.8 to -0.2 V. The above characteristics may be achieved if the ferromagnetic pinned layer is formed from Fe_3O_4 or at least one oxide or compound of Cr and Mn; the non-magnetic insulating layer is formed from at least one oxide of Sr, Ti, and Ta; or the soft magnetic free layer is a CoFe alloy containing 70-100 atom% of Co, the ferromagnetic pinned layer is a CoFe alloy containing 0-70 atom% of Co, and the non-magnetic insulating layer is formed from at least one oxide of Sr, Ti, and Ta.